VOLUME 51 · 1996 · CONTENTS

Animal Behaviour

EXECUTIVE EDITORS

Christopher J. Barnard
University of Nottingham

Michael D. Beecher
University of Washington

EDITORS

Marian Stamp Dawkins
Oxford University

Robin I. M. Dunbar
Liverpool University

Fred C. Dyer
Michigan State University

Bennett G. Galef, Jr
McMaster University

Tim Guilford
Oxford University

P. L. Schwagmeyer
University of Oklahoma

Peter M. Waser
Purdue University

MANAGING EDITORS

Ana Dos Santos
University of Washington

Patricia Loesche
University of Washington

Angela K. Turner
University of Nottingham

ACADEMIC PRESS · LONDON

© 1996 The Association for the Study of Animal Behaviour

CONTENTS OF VOLUME 51

ABBOTT, D.H. *see* SALTZMAN, W.
aboriginal house mouse, social organization 327
Achroia grisella 1095
acoustics and sound reproduction, frogs 255
Acris crepitans 501
Acrocephalus melanopogon 1199
ADAMS, D.C., ANTHONY, C.D. Using randomization techniques to analyse behavioural data .. 733
ADAMS, E.S. *see* BALAS, N.T.
adult turnover in eastern bluebirds 1307
aerobic respiration and dive cycle 1247
aggression
  maternal effort in mice 67
  and play in infant spotted hyaenas 1323
Agkistrodon contortrix 367
ALADOS, C.L., ESCOS, J.M., EMLEN, J.M. Fractal structure of sequential behaviour patterns: an indicator of stress 437
alarm calls in moustached warbler 1199
ALBERTS, S.C., ALTMANN, J., WILSON, M.L. Mate guarding constrains foraging activity of male baboons 1269
Allonemobius spp.
  A. fasciatus 981
  A. socius 981
Alouatta palliata 1269
alpine accentors: copulation control 27
ALTMANN, J. *see* ALBERTS, S.C.
Amazilia saucerottei 1375
American black ducks: behavioural dominance 409
amplexus and mate choice by barking treefrogs 881
anaerobic respiration and dive cycle 1247
Anas spp.
  A. platyrhynchos 409
  A. rubripes 409
ANKNEY, C.D. *see* HOYSAK, D.J.
anogenital distance in house mice 925
Anolis spp. 593
Anoptichthy jordani 1409
ANTHONY, C.D. *see* ADAMS, D.C.
Anthopleura elegantissima 1233
ants
  Argentine, primary sex ratio in 445
  combat strategies of 1207
  competition and queens in 831
  foraging behaviour and colony structure 141
  and honeydew flicking by treehoppers 1071
  parasitizes via pheromones 61
anurans
  chorus behaviour in 501
  female mate choice of 881
aphids: intraspecific fighting in 645
Apis mellifera 631
Apocephalus paraponerae 61
Araneae: Lycosidae 1285
Argentine ant: primary sex ratio in 445
ARLETTAZ, R. Feeding behaviour and foraging strategy of free-living mouse-eared bats, *Myotis myotis* and *Myotis blythii* 1
ARMSTRONG, J.D. *see* BRAITHWAITE, V.A.
ARNEMANN, J. *see* PAUL, A.
Astegopteryx minuta 645
Ateles spp. 1269
Atlantic salmon: spatial learning in 1409
Atta laevigata 1207
AVERY, M.L. Food avoidance by adult house finches, *Carpodacus mexicanus*, affects seed preferences of offspring 1279

AYRE, D.J., GROSBERG, R.K. Effects of social organization on inter-clonal dominance relationships in the sea anemone, *Anthopleura elegantissima* 1233
Aythya spp.
A. ferina 1257
A. fuligula 1257
baboons: mate guarding by 1269
BACH, C.E. *see* HAZLETT, B.A.
background noise and stalking movements of spider 313
Baetis rhodani 1391
BAKER, M.C. Depauperate meme pool of vocal signals in an island population of singing honeyeaters 853
BALAKRISHNAN, R., POLLACK, G.S. Recognition of courtship song in the field cricket, *Teleogryllus oceanicus* 353
BALAS, N.T., ADAMS, E.S. Nestmate discrimination and competition in incipient colonies of fire-ants 49
BALDI, R., CAMPAGNA, C., PEDRAZA, S., LE BOEUF, B.J. Social effects of space availability on the breeding behaviour of elephant seals in Patagonia 717
BALLOUX, F. *see* KELLER, L.
bank voles: predation and oestrous cycle in 1159
Barbary macaques: sociobiology of male-infant interactions 155
BARRETT-LENNARD, L.G., FORD, J.K.B., HEISE, K.A. The mixed blessing of echolocation: differences in sonar use by fish-eating and mammal-eating killer whales 553
Bathygobius soporator 1409
Batrachyla antartandica 255
bats: mouse-eared, feeding behaviour and foraging strategy 1
bee: polyethism and behavioural canalization in 631
BEECHER, M.D., STODDARD, P.K., CAMPBELL, S.E., HORNING, C.L. Repertoire matching between neighbouring song sparrows 917
begging tactics of yellow-headed blackbirds 421
behaviour
canalization in honey bee 631
data, randomization techniques on 733
dominance
in mallards and American black ducks 409
of mice, and access to resources 1087
patterns, sequential and stress 437
predictors of dominance and tolerance in female common marmosets 657
self-grooming as communication in meadow voles 801
social, among juvenile Caribbean spiny lobsters 675
and songs of Lousiana waterthrush 785
BENUS, R.F., RÖNDIGS, M. Patterns of maternal effort in mouse lines bidirectionally selected for aggression 67
BIRD, D.M. *see* NEGRO, J.J.
birds
dive cycle, optimal allocation of time over 1247
male, and offspring 1165
motor constraints on songs 1061
see also songbirds
black ducks: American, behavioural dominance 409
black rats: pine-cone stripping techniques 611
black wheatear: stone carrying by 247
blackbirds: yellow-headed, begging tactics of 421
BLANCKENHORN, W.U. *see* MÜHLÄUSER, C.
bluebirds: natal dispersal, turnover, and dispersal costs 1307
body size
in elephant seals 1295
and foraging behaviour in freshwater snails 891
BRAITHWAITE, V.A., ARMSTRONG, J.D., MCADAM, H.M., HUNTINGFORD, F.A. Can juvenile Atlantic salmon use multiple cue systems in spatial learning? 1409
breeding
cooperative, in white-throated magpie-jay 519
elephant seals in Patagonia 717
multiple, in great tits 957
and natal dispersal of white-throated magpie-jay 575
Brienomyrus 391

BRIGGS, S.E. *see* GODIN, J.-G.
BRILLANT, S.W. *see* TERHUNE, J.M.
brood size manipulation in zebra finch 699
BRUNNER, D., KACELNIK, A., GIBBON, J. Memory for inter-reinforcement interval variability and patch departure decisions in the starling, *Sturnus vulgaris* 1025
BUCKLEY, L.L. *see* GALEF, B.G. JR.
Bufo spp.
B. calamita 501
B. cognatus 501
BURA, E.A. *see* GAMBOA, G.J.
burrow acoustics and sound reproduction by frogs 255
CALDERONE, N.W., PAGE, R.E. Jr. Temporal polyethism and behavioural canalization in the honey bee, *Apis mellifera* 631
callers and satellites: chorus behaviour in anurans 501
Callithrix jacchus 657
Calocitta formosa 519, 575
CAMPAGNA, C. *see* BALDI, R.
CAMPBELL, S.E. *see* BEECHER, M.D.
cannibalism, filial, avoidance of 293
Capra pyrenaica 437
Carassius auratus 1409
CARBONE, C., DE LEEUW, J.J., HOUSTON, A.I. Adjustments in the diving time budgets of tufted duck and pochard: is there evidence for a mix of metabolic pathways? 1257
CARBONE, C., HOUSTON, A.I. The optimal allocation of time over the dive cycle: an approach based on aerobic and anaerobic respiration 1247
Caribbean spiny lobsters: social behaviour among 675
Carpodacus mexicanus 1279
Centruroides vittatus 1017
Cervus elaphus 1269
chicks
food and water, novel colour and smell on 1417
reactions and alarm calls, moustached warbler 1199
chiffchaff: song activity in 709
CHILDRESS, M.J., HERRNKIND, W.F. The ontology of social behaviour among juvenile Caribbean spiny lobsters 675
CHIVERS, D.P. *see* MATHIS, A.
Chlorostilbon canivetii 1375
CHOINIERE, E. *see* HERBERS, J.M.
chorus behaviour in anurans 501
CHOW, A., MACKAUER, M. Sequential allocation of offspring sexes in the hyperparasitoid wasp, *Dendrocerus carpenteri* 859
CHRISTIAN, C. *see* HURST, J.L.
Clethrionomys glareolus 1159
Clibanarius vittatus 567, 589
clutch size
in parasitoid wasps 841
wasps, and parasitoid intruder-owner contests 1363
COLLIAS, E.C. *see* COLLIAS, N.E.
COLLIAS, N.E., COLLIAS, E.C. Social organization of a red junglefowl, *Gallus gallus*, population related to evolutionary theory 1337
colony structure and foraging behaviour in ants 141
colour, novel, response of chicks to 1417
combat strategies of ants 1207
communication and self-grooming in meadow voles 801
competition
ants, and queens 831
and nestmate discrimination in fire-ants 49
for prey between three-spined stickleback 689
and social organization in aboriginal house mouse 327
cooperative breeding in white-throated magpie-jay 519
copperheads: head lifting by female 367
copulation
alpine accentors and dunnocks 27

and cyclic food abundance in kestrels 945
duration of yellow dung fly 1401
female European starlings, solicitation rate 1141
Cornus corax 89
courtship
head lifting by female copperheads during 367
male, and female choice in fruitflies 821
song in field crickets 353
crab, hermit
interspecific shell transfer 589
shell exchanges by 567
crickets
female, song preferences 981
field, courtship song in 353
male sagebrush, mating success in 1119
Crocuta crocuta 1323
Culaea inconstans 185
Cynomys gunnisoni 871
Cyphoderris spp.
C. monstrosa 211
C. strepitans 1119
Damaliscus lunatus topi 501
damselfly: larval behaviour of 77
DAVIES, N.B., HARTLEY, I.R., HATCHWELL, B.J., LANGMORE, N.E. Female control of copulations to maximize male help: a comparison of polygynandrous alpine accentors, *Prunella collaris*, and dunnocks, *P. modularis* 27
DE KOGEL, C.H., PRIJS, H.J. Effects of brood size manipulation on sexual attractiveness of offspring in the zebra finch 699
DE LEEUW, J.J. *see* CARBONE, C.
DEL-CARLO, K., OLIVEIRA, P.S. Honeydew flicking by treehoppers provides cues to potential tending ants 1071
Dendrocerus carpenteri 859
Dendroica spp.
D. adelaidae 375
D. petechia 265
DEWITT, T.J. Gender contests in a simultaneous hermaphrodite snail: a size-advantage model for behaviour 345
Didymopanax vinosum 1071
dikdik: Kirk's, monogamy in 131
DILLON, R.T. JR. *see* WETHINGTON, A.R.
Diptera: Phoridae 61
dispersal
costs in eastern bluebirds 1307
natal, in European rabbits 1047
diving
cycle, optimal allocation of time over 1247
time budgets of tufted duck and pochard 1257
DNA fingerprinting in kestrels
and cyclic food abundance 945
and extra-pair fertilizations 935
DOHERTY, J.A., HOWARD, D.J. Lack of preferences for conspecific calling songs in female crickets .. 981
domestic fowl: offspring sex ratios 725
dominance
in female Japanese macaques 967
inter-clonal, in sea anemone 1233
and larval behaviour of gaint damselfly 77
male, in Cayo Santiago rhesus macaques 1219
in mallards and American black ducks 409
and novel food locations 1375
offspring sex ratios in domestic fowl 725
social, in brown hyaenas 535
and tolerance in marmosets 657
DONAZAR, J.A. *see* NEGRO, J.J.

DREA, C.M., HAWK, J.E., GLICKMAN, S.E. Aggression decreases as play emerges in infant spotted hyaenas: preparation for joining the clan 1323
DRICKAMER, L.C. Intra-uterine position and anogenital distance in house mice: consequences under field conditions 925
DRONEY, D.C. Environmental influences on male courtship and implications for female choice in a lekking Hawaiian *Drosophila* 821
Drosophila spp. 821
D. grimshawi 821
duelling aphids: intraspecific fighting in 645
dung flies: copula duration in 1401
dunnocks: copulation control 27
DUVALL, D. *see* SCHUETT, G.W.
echolocation by killer whales 553
EENS, M., PINXTEN, R. Female European starlings increase their copulation solicitation rate when faced with the risk of polygyny 1141
EKLÖV, P., PERSSON, L. The response of prey to the risk of predation: proximate cues for refuging juvenile fish 105
electric fish: tracking 391
electric organ discharge waveforms in fish 391
elephant seals
male reproductive behaviour 1295
space availability on breeding behaviour 717
Emberizia schoenichus 1165
Emberizidae: Parulinae 375
EMLEN, J.M. *see* ALADOS, C.L.
EMOND, R.E. *see* RENDALL, D.
endocrine predictors of dominance and tolerance in marmosets 657
escape behaviour of lizards 593
ESCOS, J.M. *see* ALADOS, C.L.
Esox lucius 105, 185
ESPELIE, K.E. *see* GAMBOA, G.J.
Eupsophus emiliopugini 255
EVANS, C.S. *see* ROSENTHAL, G.G.
EVANS, J.D. Competition and relatedness between queens of the facultatively polygynous ant *Myrmica tahoensis* 831
Falco spp.
F. naumanni 935
F. tinnunculus 945
feeding
bats, behaviour of 1
begging tactics of yellow-headed blackbirds 421
competition among three-spined stickleback 689
and fighting behaviour in aphids 645
jackass penguins 1383
pine-cone stripping by black rats 611
raven roosts as information centres for 89
and risk of mortality in piglets 619
starlings games in 773
success in female Japanese macaques 967
FEENER, D.H. JR., JACOBS, L.F., SCHMIDT, J.O. Specialized parasitoid attracted to a pheromone of ants 61
female control of copulation 27
female mate choice
of barking treefrogs 881
by female copperheads during courtship 367
great snipe 1355
and male courtship in fruitflies 821
under predation risk in guppy 117
and ultrasonic communication in wax moths 1095
female phonotaxis in crickets 981
female preference in green swordtail 811
FERKIN, M.H., SOROKIN, E.S., JOHNSTON, R.E. Self-grooming as a sexually dimorphic communicative behaviour in meadow voles, *Microtus pennsylvanicus* 801
fertilization, in lesser kestrel 935

FESSL, B. *see* KLEINDORFER, S.
Ficedula hypoleuca 739
field cricket: courtship song 353
fighting behaviour in aphids 645
finches
  seed preferences of offspring 1279
  see also zebra finches
FINCKE, O.M. Larval behaviour of a giant damselfly: territoriality or size-dependent dominance? .. 77
fire-ants: nestmate discrimination and competition 49
fish
  cultural transmission of predator recognition 185
  electric, tracking 391
  filial cannibalism, avoidance of 293
  mayflies, predation of 1391
  predation encounters among 105
FISKE, P., KÅLÅS, J.A., SÆTHER, S.A. Do female great snipe copy each other's mate choice? .. 1355
food
  abundance, copulatory behaviour and paternity in kestrels 945
  avoidance, finches 1279
  novel colour and smell on response of chicks 1417
food patch
  decisions in starlings 1025
  residence time in wolf spiders 1285
  size and inter-patch distance in female Japanese macaques 967
foraging
  and colony structure in ants 141
  and dive cycle, optimal allocation of time over 1247
  dominance and novel food locations 1375
  of freshwater snails 891
  group structure 171
  and load-size decision grey jays 903
  and mate guarding of male baboons 1269
  and natal dispersal of white-throated magpie-jay 575
  and spatial memory in rufous hummingbirds 177
  starlings, games in 773
  strategy of mouse-eared bats 1
  trails used by Norway rats 765
FORD, J.K.B. *see* BARRETT-LENNARD, L.G.
FORMANOWICZ, D.R. JR. *see* SHAFFER, L.R.
Formicidae (Hymenoptera) 61
FOSTER, W.A. Duelling aphids: intraspecific fighting in *Astegopteryx minuta* (Homoptera: Hormaphididae) 645
fowl
  domestic, dominance rank and offspring sex ratios 725
  social organization of 1337
FRASER, D. *see* WEARY, D.M.
freshwater snails
  foraging behaviour in 891
  predation on 747
FRIEDMAN, M.A., HOPKINS, C.D. Tracking individual mormyrid electric fish in the field using electric organ discharge waveforms 391
frogs
  burrow acoustics and sound reproduction 255
  chorus behaviour in 501
fruitfly: male courtship and female choice 821
GALEF, B.G. JR., BUCKLEY, L.L. Use of foraging trails by Norway rats 765
Gallinago media 1355
Gallus gallus 1337
Gallus gallus domesticus 725, 1417
GAMBOA, G.J., GRUDZIEN, T.A., ESPELIE, K.E., BURA, E.A. Kin recognition pheromones in social wasps: combining chemical and behavioural evidence 625
Gasterosteus spp.
  G. aculeatus 1409

G. aculeatus, L. 689
gender choice in freshwater snail 1107
gender conflict in freshwater snail 1107
gender contests in hermaphrodite snails 345
GENTILE, K. *see* WILCOX, R.S.
Gerbillurus tytonis 619
GERHARDT, H.C. *see* MURPHY, C.G.
GETTY, T. Mate selection by repeated inspection: more on pied flycatchers 739
giant damselfly: larval behaviour of 77
GIBBON, J. *see* BRUNNER, D.
GILL, A.B., HART, P.J.B. Unequal competition between three-spined stickleback, *Gasterosteus aculeatus*, L., encountering sequential prey 689
GIRALDEAU, L.-A. *see* KOOPS, M.A.
GLICKMAN, S.E. *see* DREA, C.M.
GODIN, J.-G., BRIGGS, S.E. Female mate choice under predation risk in the guppy 117
Goniozus nephantidis 1363
GOWATY, P.A. *see* PLISSNER, J.H.
GRAY, R.D. *see* KENNEDY, M.
great snipe: mate choice in 1355
great tit: post-fledging care 957
GREENFIELD, M.D. *see* JANG, Y.W.
grey jays: foraging and load-size decision of 903
GROSBERG, R.K. *see* AYRE, D.J.
group size and individual vigilance 1077
GRUDZIEN, T.A. *see* GAMBOA, G.J.
Gryllidae (Orthoptera) 981
Guayaquila xiphias 1071
Gunnison's prairie dogs: anti-predator calls of 871
guppy: female mate choice 117
habitat use, freshwater snails, and predation 747
Haglidae (Orthoptera) 211
HALL, S. *see* HURST, J.L.
hand preferences in orang-utans 13
harbour seal: vigilance and haul out 757
HARDY, I.C.W. *see* PETERSEN, G.
harem size and male reproductive behaviour in elephant seals 1295
HART, P.J.B. *see* GILL, A.B.
HARTLEY, I.R. *see* DAVIES, N.B.
HARVEY, H. *see* PRICE, K.
HATCHWELL, B.J. *see* DAVIES, N.B.
Hawaiian fruitflies: male courtship and female choice 821
HAWK, J.E. *see* DREA, C.M.
HAZLETT, B.A. Assessments during shell exchanges by the hermit crab *Clibanarius vittatus*: the complete negotiator 567
HAZLETT, B.A., RITTSCHOF, D., BACH, C.E. Interspecific shell transfer by mutual predation site attendance 589
head lifting by female copperheads during courtship 367
HEALY, S.D. *see* HURLEY, T.A.
HEINRICH, B. *see* MARZLUFF, J.M.
HEISE, K.A. *see* BARRETT-LENNARD, L.G.
HERBERS, J.M., CHOINIERE, E. Foraging behaviour and colony structure in ants 141
hermaphrodite snail: gender contests in 345
hermaphrodites, gender choice and gender conflict in 1107
hermit crab
  interspecific shell transfer 589
  shell exchanges by 567
HERRNKIND, W.F. *see* CHILDRESS, M.J.
HIRALDO, F. *see* NEGRO, J.J.
HOI, H. *see* KLEINDORFER, S.
Homoptera: Hormaphididae 645
honey bee: polyethism and behavioural canalization in 631
honeydew flicking by treehoppers, and ants 1071
honeyeaters: vocal signals of 853

HONGKHAM, D. *see* ROSENHEIM, J.A.
HOOGLAND, J.L. Why do Gunnison's prairie dogs give anti-predator calls? 871
HOPKINS, C.D. *see* FRIEDMAN, M.A.
Hormaphididae (Homoptera) 645
HORNE, T.J. *see* KOSKELA, E.
HORNIG, L.E., MCCLINTOCK, M.K. Male sexual rest affects litter sex ratio of newborn Norway rats .. 991
HORNING, C.L. *see* BEECHER, M.D.
HOUSTON, A.I. *see* CARBONE, C.
HOWARD, D.J. *see* DOHERTY, J.A.
HOWARD, R.D. *see* LUCAS, J.R.
HOYSAK, D.J., ANKNEY, C.D. Correlates of behavioural dominance in mallards and American black ducks 409
HUHTA, A. *see* TIKKANEN, P.
hummingbirds
dominance and novel food locations 1375
memory for flowers in 1149
spatial memory in 177
HUNTINGFORD, F.A. *see* BRAITHWAITE, V.A.
HURLY, T.A., HEALY, S.D. Memory for flowers in rufous hummingbirds: location or local visual cues? 1149
HURLY, T.A. Spatial memory in rufous hummingbirds: memory for rewarded and non-rewarded sites 177
HURST, J.L., HALL, S., ROBERTS, R., CHRISTIAN, C. Social organization in the aboriginal house mouse, *Mus spretus* Lataste: behavioural mechanisms underlying the spatial dispersion of competitors 327
HUT, R.A. *see* VERHULST, S.
Hyaena brunnea 535
hyaenas
brown, social dominance and reproductive patterns 535
spotted, aggression and play in 1323
Hyla gratiosa 881
Hyla spp.
H. cinerea 501
H. versicolor 501
Hymenoptera: Formicidae 61
hyperparasitoid wasp: offspring sex in 859
ibex: sequential behaviour patterns and stress 437
infant locomotion in pigtail macaques 603
INNES, K., JOHNSTON, R.E. Cooperative breeding in the white-throated magpie-jay. How do auxilliaries influence nesting success? 519
insects: territoriality and song in 211
intra-uterine position in house mice 925
Iridomyrmex humilis 445
IRSCHICK, D.J. *see* LOSOS, J.B.
jackass penguins: scramble feeding in 1383
JACKSON, R.R. *see* WILCOX, R.S.
JACOBS, L.F. *see* FEENER, D.H. JR.
JAFFE, K. *see* WHITEHOUSE, M.E.A.
JANG, Y.W., GREENFIELD, M.D. Ultrasonic communication and sexual selection in wax moths: female choice based on energy and asynchrony of male signals 1095
Japanese macaques: dominance and feeding success in 967
jays: grey, foraging and load-size decision of 903
JOHNSTON, R.E.
see FERKIN, M.H.
see INNES, K.
junglefowl: social organization of 1337
KACELNIK, A. *see* BRUNNER, D.
KÅLÅS, J.A. *see* FISKE, P.
KAPLAN, G. *see* ROGERS, L.J.
KELLER, L., L'HOSTE, G., BALLOUX, F., PLUMEY, O. Queen number influences the primary sex ratio in the Argentine ant, *Linepithema humile* (=*Iridomyrmex humilis*) 445
KEMPENAERS, B., SHELDON, B.C. Why do male birds not discriminate between their own and extra-pair offspring? 1165

KENNEDY, M., SPENCER, H.G., GRAY, R.D. Hop, step and gape: do social displays of the Pelecaniformes reflect phylogeny? 273
kestrel: DNA fingerprinting of
and cyclic food abundance 945
extra-pair fertilizations in 935
killer whales: sonar use by 553
kin recognition in social wasps 625
Kirk's dikdik: monogamy in 131
KLEINDORFER, S., HOI, H., FESSL, B. Alarm calls and chick reactions in the moustached warbler, *Acrocephalus melanopogon* 1199
KOMERS, P.E. Obligate monogamy without paternal care in Kirk's dikdik 131
KOOPS, M.A., GIRALDEAU, L.-A. Producer–scrounger foraging games in starlings: a test of rate-maximizing and risk-sensitive models 773
KORPIMÄKI, E., LAHTI, K., MAY, C.A., PARKIN, D.T., POWELL, G.B., TOLONEN, P., WETTON, J.H. Copulatory behaviour and paternity determined by DNA fingerprinting in kestrels: effects of cyclic food abundance 945
KOSKELA, E., HORNE, T.J., MAPPES, T., YLÖNEN, H. Does risk of small mustelid predation affect the oestrous cycle in the bank vole, *Clethrionomys glareolus*? 1159
KUESTER, J. *see* PAUL, A.
KUHNLEIN, U. *see* NEGRO, J.J.
KÜNKELE, J., VON HOLST, D. Natal dispersal in the European wild rabbit 1047
LAHTI, K. *see* KORPIMÄKI, E.
LANGEN, T.A. Skill acquisition and the timing of natal dispersal in the white-throated magpie-jay, *Calocitta formosa* 575
LANGMORE, N.E. *see* DAVIES, N.B.
larval behaviour of giant damselfly 77
lateral biases in rehabilitated orang-utans 13
LAURILA, A. *see* RANTA, E.
LE BOEUF, B.J. *see* BALDI, R.
leaf-cutting ants: combat strategies of 1207
LEMON, R.E. *see* LOZANO, G.A.
LEONARD, M.L., WEATHERHEAD, P.J. Dominance rank and offspring sex ratios in domestic fowl .. 725
Lepomis spp.
L. gibbosus 747
L. macrochirus 501
Leptodactylidae 255
LEVRI, E.P., LIVELY, C.M. The effects of size, reproductive condition, and parasitism on foraging behaviour in a freshwater snail, *Potamopyrgus antipodarum* 891
L'HOSTE, G. *see* KELLER, L.
LIMA, N.R.W., VRIJENHOEK, R.C. Avoidance of filial cannibalism by sexual and clonal forms of *Poeciliopsis* (Pisces: Poeciliidae) 293
LINDÉN, M. *see* SOLER, M.
Linepithema humile 445
LIVERLY, C.M. *see* LEVRI, E.P.
lizards: escape behaviour of 593
lobsters: Caribbean spiny, social behaviour among 675
LOSOS, J.B., IRSCHICK, D.J. The effect of perch diameter on escape behaviour of *Anolis* lizards: laboratory predictions and field tests 593
Lousiana waterthrush: songs of 785
Loxodonta africana 1269
LOZANO, G.A., LEMON, R.E. Male plumage, paternal care and reproductive success in yellow warblers, *Dendroica petechia* 265
LUCAS, J.R., HOWARD, R.D., PALMER, J.G. Callers and satellites: chorus behaviour in anurans as a stochastic dynamic game 501
Lycosidae (Araneae) 1285
Macaca spp.
M. fuscata 967, 1269
M. mulatta 1007, 1219, 1269
M. nemestrina 603
M. sylvanus 155
macaques
Barbary, sociobiology of male–infant interactions 155
Japanese, dominance and feeding success in 967

pigtail, infant locomotion in 603
rhesus
male dominance in 1219
vocal recognition in 1007
MACKAUER, M. *see* CHOW, A.
Madoqua kirki 131
MAESTRIPIERI, D. Maternal encouragement of infant locomotion in pigtail macaques, *Macaca nemestrina* 603
magpie-jay: white-throated, cooperative breeding 519
male–infant interactions in Barbary macaques 155
males
baboons, mate guarding by 1269
behaviour and female preference in green swordtail 811
birds, offspring of 1165
courtship and female choice in fruitflies 821
dominance in Cayo Santiago rhesus macaques 1219
help, and copulation control 27
mating, virgin advantage in sagebrush crickets 1119
plumage in yellow warblers 265
reproductive behaviour of elephant seals 1295
sexual rest and sex ratios in Norway rats 991
signals and sexual selection in wax moths 1095
mallards: behavioural dominance in 409
MANSON, J.H. Male dominance and mount series duration in Cayo Santiago rhesus macaques .. 1219
MAPPES, T. *see* KOSKELA, E.
MARLER, P. *see* NELSON, D.A.
marmosets: dominance and tolerance in 657
MARPLES, N.M., ROPER, T.J. Effects of novel colour and smell on the response of naive chicks towards food and water 1417
MARZLUFF, C.S. *see* MARZLUFF, J.M.
MARZLUFF, J.M., HEINRICH, B., MARZLUFF, C.S. Raven roosts are mobile information centres .. 89
MASON, A.C. Territoriality and the function of song in the primitive acoustic insect *Cyphoderris monstrosa* (Orthoptera: Haglidae) 211
mate choice in great snipe 1355
mate guarding
and foraging activity of male baboons 1269
and song activity in chiffchaff 709
mate selection by pied flycatchers 739
maternal crushing, risk of in piglets 619
maternal effort and aggression in mice 67
maternity and infant locomotion in pigtail macaques 603
MATHIS, A., CHIVERS, D.P., SMITH, R.J.F. Cultural transmission of predator recognition in fishes: intraspecific and interspecific learning 185
mating advantage in sagebrush crickets 1119
MAY, C.A. *see* KORPIMÄKI, E.
mayflies: and predatory fish 1391
MCADAM, H.M. *see* BRAITHWAITE, V.A.
MCCLINTOCK, M.K. *see* HORNIG, L.E.
meadow voles: self-grooming in 801
Megaloprepus coerulatus 77
Meliphaga virescens 853
Melospiza spp.
M. georgiana 1061
M. melodia 917
meme pools and songs of honeyeaters 853
memory
in foraging decisions in starlings 1025
of rufous hummingbirds 1149
METCALFE, N.B. *see* RANTA, E.
mice
behaviour and resources 1087
intra-uterine position and anogenital distance 925
maternal effort and aggression 67

social organization in 327
Microtus pennsylvanicus 801
migration and overproduction in song development 1127
MILLER, W.L. *see* ROSENTHAL, G.G.
minnows: cultural transmission of predator recognition 185
Mirounga spp.
M. angustirostris 1269
M. leonina 717, 1295
MODIG, A.O. Effects of body size and harem size on male reproductive behaviour in the southern elephant seal 1295
MØLLER, A.P. *see* SOLER, M.
monogamy and paternal care in Kirk's dikdik 131
MORENO, J. *see* SOLER, M.
mortality, risk of in piglets 619
MORTON, M.L. *see* NELSON, D.A.
moths: ultrasonic communication and sexual selection in 1095
mount series duration in Cayo Santiago rhesus macaques 1219
mouse-eared bats: feeding behaviour and foraging strategy 1
moustached warbler: alarm calls in 1199
MÜHLÄUSER, C., BLANCKENHORN, W.U., WARD, P.I. The genetic component of copula duration in the yellow dung fly 1401
MUOTKA, T. *see* TIKKANEN, P. 1391
MURPHY, C.G., GERHARDT, H.C. Evaluating the design of mate-choice experiments: the effect of amplexus on mate choice by female barking treefrogs, *Hyla gratiosa* 881
Mus spp.
M. domesticus 67, 925
M. musculus 1087
M. spretus Lataste 327
Myotis spp.
M. blythii 1
M. myotis 1
Myrmica spp.
M. punctiventris 141
M. tahoensis 831
natal dispersal
in eastern bluebirds 1307
in European rabbits 1047
of white-throated magpie-jay 575
NEGRO, J.J., VILLARROEL, M., TELLA, J.L., KUHNLEIN, U., HIRALDO, F., DONAZAR, J.A., BIRD, D.M. DNA fingerprinting reveals a low incidence of extra-pair fertilizations in the lesser kestrel .. 935
NELSON, D.A., MARLER, P., MORTON, M.L. Overproduction in song development: an evolutionary correlate with migration 1127
nest defence in leaf-cutting ants 1207
nesting success in white-throated magpie-jay 519
nestmate discrimination and competition in fire-ants 49
NICOL, C.J. *see* SHERWIN, C.M.
Norway rats
foraging trails of 765
male sexual rest in 991
Oenanthe leucura 247
oestrous cycle in bank voles 1159
offspring
and brood size manipulation in zebra finch 699
and food avoidance by adults 1279
male birds and 1165
natal dispersal in white-throated magpie-jay 575
sex of hyperparasitoid wasp 859
sex ratios in domestic fowl 725
OLIVEIRA, P.S. *see* DEL-CARLO, K.
orang-utans: hand preferences and lateral biases 13
Orcinus orca 553
Orthoptera: Gryllidae 981
Orthoptera: Haglidae 211

Oryctolagus cuniculus 1047
Ovis spp.
O. canadensis 1269
O. dalli 1269
OWENS, D., OWENS, M. Social dominance and reproductive patterns in brown hyaenas, *Hyaena brunnea*, of the central Kalahari desert 535
OWENS, M. *see* OWENS, D.
PAGE, R.E. JR. *see* CALDERONE, N.W.
Pagurus pollicaris 589
pairing status, honest advertisement of 375
PAJOR, E.A. *see* WEARY, D.M.
PALMER, J.G. *see* LUCAS, J.R.
Pan troglodytes 1269
Panulirus argus 675
Papio cynocephalus 1269
Paraponera clavata 61
parasites/parasitism/parasitoids
and foraging behaviour in freshwater snails 891
and pheromones of ants 61
sequential behaviour patterns and stress 437
wasps
and clutch size 841
intruder–owner contests in 1363
offspring sex in 859
parental care, cost of in scorpions 1017
PARKIN, D.T. *see* KORPIMÄKI, E.
Parulinae 375, 785
Parus major 957
paternal care
male birds, offspring of 1165
and monogamy in Kirk's dikdik 131
in yellow warblers 265
paternity and cyclic food abundance in kestrels 945
PAUL, A., KUESTER, J., ARNEMANN, J. The sociobiology of male–infant interactions in Barbary macaques, *Macaca sylvanus* 155
PEDRAZA, S. *see* BALDI, R.
Pelecaniformes 273
penguins: scramble feeding in 1383
PENNA, M., SOLIS, R. Influence of burrow acoustics on sound reproduction by frogs *Eupsophus* (Leptodactylidae) 255
Perca fluviatilis 105
perch
diameter and escape behaviour of lizards 593
response to risk of predation 105
Perisoreus canadensis 903
PERSONS, M.H., UETZ, G.W. The influence of sensory information on patch residence time in wolf spiders (Araneae: Lycosidae) 1285
PERSSON, L. *see* EKLÖV, P.
PETERSEN, G., HARDY, I.C.W. The importance of being larger: parasitoid intruder–owner contests and their implications for clutch size 1363
PEUHKURI, N. *see* RANTA, E.
Phalacrocorax varius 273
pheromones
ants, parasitizing 61
kin recognition in social wasps 625
Philomachus pugnax 501
Phoca vitulina 757
phonotaxis
female, in crickets 981
and sexual selection in wax moths 1095
Phoridae (Diptera) 61
Phoxinus phoxinus 1391
Phylloscopus collybita 709

phylogeny and social displays of Pelecaniformes 273
Physa spp. 1107
P. gyrina 345
P. heterostropha 345
P. heterostropha pomilia 1107
pied flycatchers: mate selection by 739
piglets: feeding and risk of mortality 619
pigtail macaques: infant locomotion in 603
pike, predation by
recognition of, cultural transmission 185
response to risk of 105
Pimephales promelas 185
pine-cone stripping by black rats 611
PINXTEN, R. *see* EENS, M.
Pisces: Poeciliidae 303
play and aggression in infant spotted hyaenas 1323
PLISSNER, J.H., GOWATY, P.A. Patterns of natal dispersal, turnover, and dispersal costs in eastern bluebirds 1307
plumage, male, in yellow warblers 265
PLUMEY, O. *see* KELLER, L.
PODOS, J. Motor constraints on vocal development in a songbird 1061
Poecilia reticulata 117
Poeciliidae (Pisces) 303
Poeciliopsis spp. 303
P. lucida 303
P. monacha-lucida 303
Polistes fuscatus 625
POLLACK, G.S. *see* BALAKRISHNAN, R.
polygyny and copulation in female European starlings 1141
pochard: diving time budgets 1257
Pongo pygmaeus pygmaeus 13
Portia spp.
P. africana 313
P. fimbriata 313
P. labiata 313
P. schultzi 313
post-fledging care in great tits 957
Potamopyrgus antipodarum 891
POWELL, G.B. *see* KORPIMÄKI, E.
prairie dogs: Gunnison's, anti-predator calls of 871
predation
cultural transmission of recognition in fishes 185
female mate choice under risk of in guppy 117
freshwater snails response to 747
Gunnison's prairie dogs, anti-predator calls of 871
and interspecific shell transfer 589
of mayflies by fish 1391
mustelid, and oestrous cycle in bank voles 1159
response of prey to among fish 105
predator recognition in fishes 185
prey
response to predation among fish 105
sequential, competition for 689
PRICE, K., HARVEY, H., YDENBERG, R. Begging tactics of nestling yellow-headed blackbirds, *Xanthocephalus xanthocephalus*, in relation to need 421
PRIJS, H.J. *see* DE KOGEL, C.H.
producers
and foraging group structure 171
and scroungers, foraging games in starlings 773
Prunella spp.
P. collaris 27
P. modularis 27, 1165
Pseudacris spp.

P. crucifer 501
P. regilla 501
queen number and primary sex ratio in Argentine ant 445
rabbits: European, natal dispersal in 1047
Rana spp.
R. catesbeiana 501
R. clamitans 501
randomization techniques on behavioural data 733
RANTA, E., PEUHKURI, N., LAURILA, A., RITA, H., METCALFE, N.B. Producers, scroungers and foraging group structure 171
rats
black, pine-cone stripping techniques 611
Norway
foraging trails of 765
male sexual rest in 991
Rattus spp.
R. norvegicus 765, 991
R. rattus 611
ravens: roosts as information centres 89
red junglefowl: social organization of 1337
RENDALL, D., RODMAN, P.S., EMOND, R.E. Vocal recognition of individuals and kin in free-ranging rhesus monkeys 1007
reproduction
condition, and foraging behaviour in freshwater snails 891
conflicts, and queens of ants 831
costs in great tits 957
effort in scorpions 1017
elephant seals, body size and harem size 1295
patterns in brown hyaenas 535
success and symmetry in zebra finches 203
success in yellow warblers 265
resources, access to of mice 1087
rhesus macaques
male dominance in 1219
vocal recognition in 1007
RITA, H. *see* RANTA, E.
RITTSCHOF, D. *see* HAZLETT, B.A.
roach: response of to risk of predation 105
ROBERTS, G. Why individual vigilance declines as group size increases 1077
ROBERTS, R. *see* HURST, J.L.
ROBERTSON, B.C. Vocal mate recognition in a monogamous, flock-forming bird, the silvereye, *Zosterops lateralis* 303
RODMAN, P.S. *see* RENDALL, D.
RODRIGUES, M. Song activity in the chiffchaff: territorial defence or mate guarding? 709
ROGERS, L.J., KAPLAN, G. Hand preferences and other lateral biases in rehabilitated orang-utans, *Pongo pygmaeus pygmaeus* 13
RÖNDINGS, M. *see* BENUS, R.F.
ROPER, T.J. *see* MARPLES, N.M.
ROSENHEIM, J.A., HONGKHAM, D. Clutch size in an obligately siblicidal parasitoid wasp 841
ROSENTHAL, G.G., EVANS, C.S., MILLER, W.L. Female preference for dynamic traits in the green swordtail, *Xiphophorus helleri* 811
rufous hummingbirds
memory for flowers in 1149
spatial memory in 177
Rutilus rutilus 105
SÆTHER, S.A. *see* FISKE, P.
sagebrush crickets: mating success in 1119
SAITO, M.C. Dominance and feeding success in female Japanese macaques, *Macaca fuscata:* effects of food patch size and inter-patch distance 967
Salmo salar 1409
salmon: spatial learning in 1409
SALTZMAN, W., SCHULTZ-DARKEN, N.J., ABBOTT, D.H. Behavioural and endocrine predictors of dominance and tolerance in female common marmosets, *Callithrix jacchus* 657

Sarcoptes scabieis 437
satellites and callers, chorus behaviour in anurans 501
Scathophaga stercoraria (L.) 1401
SCHMIDT, J.O. *see* FEENER, D.H. Jr.
SCHUETT, G.W., DUVALL, D. Head lifting by female copperheads, *Agkistrodon contortrix*, during courtship: potential mate choice 367
SCHULTZ-DARKEN, N.J. *see* SALTZMAN, W.
scorpions: viviparity and parental care 1017
scroungers
and foraging group structure 171
and producers, foraging games in starlings 773
sea anemone: social organization 1233
seals
elephant
male reproductive behaviour 1295
space availability on breeding behaviour 717
vigilance and haul out 757
SEDDON, P.J. *see* VAN HEEZIK, Y.M.
Seiurus motacilla (Parulinae) 785
Selasphorus rufus 177, 1149
self-grooming as communicative behaviour in meadow voles 801
sex ratios
in hyperparasitoid wasp 859
in Norway rats 991
of offspring in domestic fowl 725
and queen number in Argentine ant 445
sexual attractiveness
of offspring in the zebra finch 699
sexual communication and self-grooming in meadow voles 801
sexual display
and stone carrying in the black wheatear 247
sexual selection
in male sagebrush crickets: 1119
under predation risk in guppy 117
SHAFFER, L.R., FORMANOWICZ, D.R. Jr. A cost of viviparity and parental care in scorpions: reduced sprint speed and behavioural compensation 1017
SHELDON, B.C. *see* KEMPENAERS, B.
shell exchanges by hermit crab 567
shell transfer by mutual predation 589
SHERWIN, C.M., NICOL, C.J. Reorganization of behaviour in laboratory mice, *Mus musculus*, with varying cost of access to resources 1087
Sialia sialis 1307
siblicide, and clutch size in parasitoid wasps 841
siblings
feeding in jackass penguins 1383
silvereye: vocal mate recognition 303
skill acquisition in white-throated magpie-jay 575
smell, novel, response of chicks 1417
SMITH, A.M. *see* SMITH, W.J.
SMITH, R.J.F. *see* MATHIS, A.
SMITH, W.J., SMITH, A.M. Information about behaviour provided by Lousiana waterthrush, *Seiurus motacilla* (Parulinae), songs 785
snails
freshwater
foraging behaviour in 891
predation on 747
gender choice and conflict in 1107
gender contests in 345
snakes, female, head lifting by 367
SNEDDEN, W.A. Lifetime mating success in male sagebrush crickets: sexual selection constrained by a virgin male mating advantage 1119
social behaviour, juvenile Caribbean spiny lobsters 675
social development, infant spotted hyaenas 1323

social displays of Pelecaniformes 273
social dominance in brown hyaenas 535
social organization
in aboriginal house mouse 327
of red junglefowl 1337
in sea anemone 1233
social wasps: kin recognition in 625
Solenopsis invicta 49
SOLER, J.-J. *see* SOLER, M.
SOLER, M., SOLER, J.-J., MØLLER, A.P., MORENO, J., LINDÉN, M. The functional significance of sexual display: stone carrying in the black wheatear 247
SOLIS, R. *see* PENNA, M.
sonar, use by killer whales 553
song sparrows: repertoire matching 917
songbirds
motor constraints 1061
overproduction in and migration 1127
songs
birds, motor constraints 1061
in chiffchaff 709
courtship, in field crickets 353
of honeyeaters 853
of Lousiana waterthrush 785
overproduction in and migration 1127
preferences for in female crickets 981
repertoire matching of song sparrows 917
and territoriality in primitive acoustic insects 211
SOROKIN, E.S. *see* FERKIN, M.H.
sound reproduction by frogs 255
space availability and breeding, elephant seals 717
sparrows
song, overproduction in and migration 1127
song, repertoire matching 917
spatial learning in juvenile Atlantic salmon 1409
spatial memory in rufous hummingbirds 177
SPENCER, H.G. *see* KENNEDY, M.
Spheniscus demersus 1383
spiders
background noise and stalking movements 313
wolf, patch residence time 1285
sprint speed, reduced in scorpions 1017
STAICER, C.A. Honest advertisement of pairing status: evidence from a tropical resident wood-warbler 375
stalking, spiders, and background noise 313
starlings
female European, copulation rate 1141
foraging decisions of 1025
producer-scrounger foraging games in 773
Sterna bergii 1077
sticklebacks
cultural transmission of predator recognition 185
three-spined, competition for prey between 689
STODDARD, P.K. *see* BEECHER, M.D.
stone carrying by black wheatear 247
stress and sequential behaviour patterns 437
Sturnus vulgaris 773, 1025, 1141
Sus scrofa 619
SWADDLE, J.P. Reproductive success and symmetry in zebra finches 203
swamp sparrows: motor constraints on vocal development 1061
swordtail: female preference of 811
Sympetrum spp. 1269
Taeniopygia guttata 203, 699
Taxidea taxus 871
Teleogryllus oceanicus 353

TELLA, J.L. *see* NEGRO, J.J.
temporal polyethism in honey bee 631
TERHUNE, J.M., BRILLANT, S.W. Harbour seal vigilance decreases over time since haul out .. 757
TERKEL, J. *see* ZOHAR, O.
territoriality
and combat strategies in ants 1207
and larval behaviour of gaint damselfly 77
and song in chiffchaff 709
and song in the primitive acoustic insect 211
THOMPSON, B.K. *see* WEARY, D.M.
three-spined stickleback: competition for prey between 689
TIEBOUT, H.M. III Costs and benefits of interspecific dominance rank: are subordinates better at finding novel food locations? 1375
TIKKANEN, P., MUOTKA, T., HUHTA, A. Fishless-stream mayflies express behavioural flexibility in response to predatory fish 1391
time, optimal allocation of over dive cycle 1247
adjustments in budgets of 1257
tolerance and dominance in female marmosets 657
TOLENEN, P. *see* KORPIMÄKI, E.
treefrogs: mate choice 881
treehoppers: honeydew flicking by 1071
tufted duck: diving time budgets 1257
Turdus merula 1269
TURNER, A.M. Freshwater snails alter habitat use in response to predation 747
UETZ, G.W. *see* PERSONS, M.H.
ultrasonic communication and sexual selection in wax moths 1095
VAN HEEZIK, Y.M., SEDDON, P.J. Scramble feeding in jackass penguins: within-brood food distribution and the maintenance of sibling asymmetries 1383
VERHULST, S., HUT, R.A. Post-fledging care, multiple breeding and the costs of reproduction in the great tit 957
vigilance
of harbour seals 757
individual, and group size 1077
VILLARROEL, M. *see* NEGRO, J.J.
viviparity, cost of in scorpions 1017
vocal mate recognition in silvereye 303
vocal recognition in rhesus monkeys 1007
voles: predation and oestrous cycle in 1159
VON HOLST, D. *see* KÜNKELE, J.
VRIJENHOEK, R.C. *see* LIMA, N.R.W.
WAITE, T.A., YDENBERG, R.C. Foraging currencies and the load-size decision of scatter-hoarding grey jays 903
warbler
moustached, alarm calls in 1199
pairing status 375
WARD, P.I. *see* MÜHLÄUSER, C.
wasps
clutch size in 841
hyperparasitoid, offspring sex in 859
parasitoid intruder-owner contests 1363
social, kin recognition in 625
water, colour and smell on response of chicks 1417
waterthrush: Lousiana, songs of 785
WEARY, D.M., PAJOR, E.A., THOMPSON, B.K., FRASER, D. Risky behaviour by piglets: a trade off between feeding and risk of mortality by maternal crushing? 619
weasels: predation and oestrous cycle in bank voles 1159
WEATHERHEAD, P.J. *see* LEONARD, M.L.
WETHINGTON, A.R., DILLON, R.T. Jr. Gender choice and gender conflict in a non-reciprocally mating simultaneous hermaphrodite, the freshwater snail, *Physa* 1107
WETTON, J.H. *see* KORPIMÄKI, E.
WHITEHOUSE, M.E.A., JAFFE, K. Ant wars: combat strategies, territory and nest defence in the leaf-cutting ant *Atta laevigata* 1207
white-throated magpie-jay: natal dispersal of 575

WILCOX, R.S., JACKSON, R.R., GENTILE, K. Spiderweb smokescreens: spider trickster uses background noise to mask stalking movements 313
WILSON, M.L. *see* ALBERTS, S.C.
wolf spiders: patch residence time 1285
wood-warbler: pairing status 375
Xanthocephalus xanthocephalus 421
Xiphophorus helleri 811
YDENBERG, R.C.
see PRICE, K.
see WAITE, T.A.
yellow dung fly: copula duration in 1401
yellow warblers: male plumage, paternal care and reproductive success 265
yellow-headed blackbirds: begging tactics of 421
YLÖNEN, H. *see* KOSKELA, E.
young
Atlantic salmon, spatial learning in 1409
Barbary macaques, male-infant interactions 155
fish, response to predation among 105
pigtail macaques, infant locomotion 603
social behaviour among Caribbean spiny lobsters 675
social development in spotted hyaenas 1323
zebra finches
brood size manipulation of 699
reproductive success 203
ZOHAR, O., TERKEL, J. Social and environmental factors modulate the learning of pine-cone stripping techniques by black rats, *Rattus rattus* 611
Zonotrichia leucophrys
Z. l. nuttali 1127
Z. l. oriantha 1127
Z. l. pugetensis 1127
Zosterops lateralis 303, 1077

Commentaries

AVITAL, E., JABLONKA, E. Adoption, memes and the Oedipus complex: a reply to Hansen .. 476
CONNOR, R.C. Partner preferences in by-product mutualisms and the case of predator inspection in fish 451
COWLISHAW, G., O'CONNELL, S.M. Male–male competition, paternity certainty and copulation calls in female baboons 235
DUGATKIN, L.A. Tit for tat, by-product mutualism and predator inspection, a reply to Connor .. 455
GOWATY, P.A. Multiple mating by females selects for males that stay: another hypothesis for social monogamy in passerine birds 482
HANSEN, T.F. Does adoption make evolutionary sense? 474
HENZI, S.P. Copulation call and paternity in chacma baboons 233
HEYES, C.M. Self-recognition in primates: irreverence, irrelevance and irony 470
HOI, H., SCHLEICHER, B., VALERA, F. Nest size variation and its importance for mate choice in penduline tits, *Remiz pendulinus* 464
KRAMER, M., BELL, W.R. Comments on predictability and over differencing in vigilance sequences .. 1175
LUCAS, J.R., CREEL, S.R., WASER, P.M. How to measure inclusive fitness, revisited 225
MILINSKI, M. By-product mutualism, Tit for tat reciprocity and cooperative predator inspection: a reply to Connor 458
MITCHELL, R.W. Self-recognition, methodology and explanation: a comment on Heyes (1994) .. 467
ORR, M. Host manipulation by *Wolbachia* is a neutral trait within single populations 1183
PERSSON, O., ÖHRSTRÖM, P. Female nest choice in the penduline tit: a comment on Hoi et al. (1994).. 462
QUELLER, D.C. The measurement and meaning of inclusive fitness 229
ROBERTS, G. Testing for patterns in sequences of vigilance behaviour 1179
RUXTON, G.D. Group size and anti-predator vigilance: a simple model requiring limited monitoring of other group members 478

Book reviews

BECKER, J.B., BREEDLOVE, S.M. & CREWS, D. Behavioural Endocrinology 1193
BRYNE, R. The Thinking Ape. Evolutionary Origins of Intelligence 493

CARO, T.M. Cheetahs of the Serengeti Plains. Group Living in an Asocial Species 488
CATCHPOLE, C.K. SLATER, P.J.B. Bird Song: Biological Themes and Variations 492
FRIDLUND, A.J. Human Facial Expression: An Evolutionary View 1187
JOHNSGARD, P.A. Arena Birds: Sexual Selection and Behavior 487
KAPLAN, G., ROGERS, L.J. Orang-Utans in Borneo 485
MASSON, J.M., MCCARTHY, S. When Elephants Weep: The Emotional Lives of Animals 1190
NELSON, R.J. An Introduction to Behavioral Endocrinology 1193
POWER, D.M. Current Ornithology. volume 12 1189
RIDLEY, M. Animal Behavior: An Introduction of Behavioral Mechanisms, Development and Ecology 490
SHORT, R.V., BALABAN, E. The Differences between the Sexes 491
WRANGHAM, R.W., MCGREW, W.C., DE WAAL, F.B.M., HELTINE, P.G. Chimpanzee Cultures .. 485